

Annual Report 2020

Academic Activities

Division of Surgery Akershus University Hospital

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ANNUAL REPORT ON ACADEMIC ACTIVITIES IN 2020

Division of Surgery, Akershus University Hospital

This is the tenth annual report on research activities in the Surgical Division (SD). Like the previous report, also this annual report is written in a year of the Corona pandemic. Even though the year was marked by the demanding Corona situation, we are pleased to say that despite this, it has been a productive year in terms of research activity in the Surgical Division.

The year of 2020 began with establishing a Research department in SD. The purpose of the Research department is to stimulate to increased research activity in the division, advice in research questions, and offer support services to the researchers in the division. I have the pleasure to lead the department, combined with my clinical work and research activity. When establishing the department, we also got funds to hire an administrative consultant in a 50 % position. Besides me, the department now consists of two research coordinators and one administrative consultant.

Our publication rate and funding increased in 2020, compared to previous year. We achieved two PhD degrees the past year. The candidates who completed their dissertations were Jens Marius Næsgaard (Dep. of Digestive surgery) and Kjell-Arild Danielsen (Dep. of ENT). Christian Arstad (Dep. of Urology) and Ane-Victoria Idland (Dep. of Anaesthesiology) also successfully completed their dissertations, registered at Oslo University Hospital. In 2021 we expect several PhD-candidates to submit their thesis.

The annual PhD seminar was held in November. The PhD seminar has proved to be a good forum to practice presentations and to get feedback and to create network. During the fall of 2020 we also had dialogue meetings with the clinical departments in the division, with the means to get an overview over the research activity in the division and to hear what kind of support our researchers wish of the new Research department.

This year the plans with building a 3D-printer lab was approved and the construction work started. The lab is a collaboration between the University of Oslo, Ahus' Division for Research and Innovation, the Orthopaedic clinic and the Surgical Division. We are excited to see how the new lab, with hyper modern technology will be used in the coming years.

I am happy to see a growing interest for research in the Surgical Division. Our experienced researchers continue their exciting work and other colleagues contact the Research department with a wish to start a research project of their own. Our increased publication rate and the many ongoing PhD-projects in SD is also a joyful indication of the growing interest for research.

I thank all researchers in SD for the hard and successful job you do, mostly in your spare time. I look forward to our further cooperation in the year to come.



On behalf of the research committee and myself,

Juha Silvola, Associate professor

Department of ENT, Akershus University Hospital
Institute of Clinical Medicine, University of Oslo

RESEARCH COMMITTEE 2020

Head

Surgical Division
Dept of Anaesthesiology
Dept of Breast and Endocrine Surgery
Dept of ENT
Dept of GI Surgery
The Operating Department
Dept of Urology
Dept of Vascular and Thoracic Surgery
Palliative Medicine
Pelvic Floor Centre
Head of Division of Surgery-Campus Ahus
Research coordinators
Administrative consultant

Juha Silvola

Anne Karin Lindahl
Vegard Dahl, Signe Søvik

Harald Hrubos-Strøm
Ola Røkke, Johannes Schultz
Lise Smith Jacobsen
Stig Müller
Jarlis Wesche
Olav Magnus Fredheim
Catherine Teig
Gregor Bachmann-Harildstad
Inger Helene Nådland and Merete Helgeland
Tiril Seppola Reed

The Surgical Research Committee is an advisory body that works to promote research and researcher education in the Surgical Division. The committee comments on current research-related issues, contributes to the development of research activity in the division and ensures high research quality. The committee is led by the head of the Surgical Research Department and consists of the division's research group leaders, as well as the head of the Department of Surgical Sciences at Campus Ahus, University of Oslo. Research coordinators and consultants in the research department participate as observers in the meetings and are speakers. Monthly meetings are held except during holiday periods.



From left: Harald Hrubos-Strøm, Lise Smith Jacobsen, Jarlis Wesche, Juha Silvola, Johannes Schultz, Merete Helgeland, Signe Søvik, Stig Müller, and Gregor Bachmann-Harildstad

OVERVIEW OF RESEARCHERS

Department	University positions	Ph.D. Research fellows
Anaesthesiology	2	4
Breast and Endocrine Surgery	0	2
ENT	3	6
GI Surgery	3	6
Urology	1	0
Vascular and Thoracic Surgery	1	2
Total	10	20

SUMMARY OF RESEARCH ACTIVITY

Publications (peer reviewed) and dissertations in the Division of Surgery

Year	Publications	Dissertations
2015	31	0
2016	62	1
2017	71	1
2018	58	3
2019	41	1
2020	45	1,25



ENT Research Group

Head: Harald Hrubos-Strøm

Photo: University of Oslo

University employees	Research fellows
Associate Professor Gregor Bachmann-Harildstad	Kjell-Arild Danielsen (dissertation 2020)
Associate Professor Juha Silvola	Øystein Eskeland
Senior lecturer Erik S Lie	Thorarinn Olafsson
Senior lecturer Harald Hrubos-Strøm (Department of Behavioural Medicine, UiO)	Tonje Caroline Øverby
Professor emeritus Magnus von Unge	Ivar Vølstad
	Andreas Forsmark
	Jan Mikael Gerl
	Kjetil Askeland
	Ingebjørg Skrindo
	Andreas Steinsvik
	Marit Austeng

The ENT research group has three sub groups: the otology group, the sleep disordered breathing (SDB) group and the rhinology group.

The otology group

Treatments for otitis media have not seen major changes since the 1950s. In chronic otitis media, structural defects - particularly perforations of the tympanic membrane - cause hearing impairment and chronic infections and are still treated with surgery. Our research aims to engineer new autologous tissue, either in vitro for subsequent implantation or directly in vivo. We have identified regenerative centers in the human tympanic membrane and are currently optimizing cultivation methods and assays to assess the properties of cultivated cells, as well as trying to develop in vitro-based activation of these centers. Tympanic stem cells investigations are partly done in close collaboration with the Ear Science Institute Australia.

The sleep disordered breathing (SDB) group

In SDB, current research is based on the Nordsleep Akershus Sleep Apnea (ASAP) cohorts, collaboration with neurosurgeon and professor Per Kristian Eide, University of Oslo and professor Bjørn Bjorvatn, University of Bergen. The sub group has external funding for two PhD students at the doctoral program at the University of Oslo, a research coordinator (20%) and a project leader (40%). The PhD students are supervised in collaboration with the rhinology group and with professor Toril Dammen and Pål Gulbrandsen, University of Oslo, respectively. The research is focused on developing a decision aid tool based on hard outcomes, understanding the role of upper airways in brain metabolite clearance, to evaluate novel sensors or diagnostic devices, to study shared decision making and to develop a personalized self-management tool. A medical student master thesis is co-supervised with professor Eide, and a medical student master thesis is supervised based on a quality register coordinated by the University of Bergen.

The rhinology group

In rhinology, the main focus is on endotype and phenotype of chronic rhinosinusitis (CRS). The projects are designed to investigate relations between CRS and biofilm and between biofilm related CRS and PROMs. Another project will be on the validation of a quality of life SNOT-22 questionnaire. A quality control database on the quality of life and on the outcome of nasal function after nasal septal surgery was established. A third project is on the evaluation of objective assessments of the nasal airway. Peak nasal

inspiratory flow as objective parameter and nasal obstruction visual analogue scale as well as SNOT-22 will be performed in a large cohort both pre- and post-surgery. Further studies are planned as an interventional study for the emergency treatment of severe nosebleed and on surgical sites infections of nasal septal surgery. Finally, the group is involved with two large rhinological and allergological projects. One is the “PreventADALL study” and the other is an European collaboration developing an «My Sinusitis Coach» application.

DISSERTATION



Kjell Arild Danielsen

The role of bacterial biofilms in the pathogenesis of chronic rhinosinusitis

Supervisor: Espen Burum-Auensen

Graduation: June 11

Patients with chronic rhinosinusitis have decreased quality of life. The prevalence of this disease is estimated at above ten percent in some studies. This poses a major socioeconomic challenge.

The pathogenesis is still poorly understood. The fact that ordinary bacterial tests are often negative has led many researchers to conclude that bacteria play no part in the pathogenesis.

Within the microbiological community the importance of bacteria in chronic infectious disease is increasingly recognized. Bacteria spend more than 99 percent of their time in the colony form as biofilms. Biofilms are hard to culture on growth mediums and seldom “show up” on normal bacterial tests. Antibiotics are less effective against biofilms than the free planktonic form which represents the other major bacterial state.

The aims of the thesis were to investigate the occurrence of biofilms in patients with sinusitis undergoing surgery compared to controls. Per operative biopsies were harvested and underwent confocal laser scanning microscopy to determine the presence of biofilms.

This microscope allows 3-dimensional examination of the biopsies and is considered the gold standard for determining biofilm.

Biofilms were significantly more prevalent in sinusitis patients compared to controls (55/61 vs 14/25, $p < 0.001$, chi-square 13.1) and interestingly also a significantly higher prevalence in sinusitis patients with nasal polyps compared to sinusitis patients without polyps (33/34 vs 22/27, $p = 0.042$). Furthermore the prevalence of biofilms in the start of the ethmoid sinus cells (ethmoid bulla) was significantly higher than on the front of the middle turbinate (43/54 vs 31/50, $p = 0.047$).

These findings are comparable to international studies and strongly implies a role for bacterial biofilms in the pathogenesis of chronic sinusitis.

PUBLICATIONS (PEER REVIEWED)

Bédard A, Antó JM, Fonseca JA et al, MASK study group (including **Skrindo I**). Correlation between work impairment, scores of rhinitis severity and asthma using the MASK-air® App. *Allergy*. 2020 Jul;75(7):1672-1688.

Bousquet J, Anto JM, Czarlewski W, Haahtela T, Fonseca SC, Iaccarino G, Blain H, Vidal A, Sheikh A, Akdis CA, Zuberbier T; ARIA group (including **Skrindo I**). Cabbage and fermented vegetables: From death rate heterogeneity in countries to candidates for mitigation strategies of severe COVID-19. *Allergy*. 2021 Mar;76(3):735-750: Epub 2020 Aug 6.

Bousquet J, Anto JM, Iaccarino G, Czarlewski W, Haahtela T, Anto A, Akdis CA, Blain H, Canonica GW, Cardona V, Cruz AA, Illario M, Ivancevich JC, Jutel M, Klimek L, Kuna P, Laune D, Larenas-Linnemann D, Mullol J, Papadopoulos NG, Pfaar O, Samolinski B, Valiulis A, Yorgancioglu A, Zuberbier T; ARIA group (including **Skrindo I**). Is diet partly responsible for differences in COVID-19 death rates between and within countries? Version 2. *Clin Transl Allergy*. 2020 May 27;10:16.

Bousquet J, Cristol JP, Czarlewski W, Anto JM, Martineau A, Haahtela T, Fonseca SC, Iaccarino G, Blain H, Fiocchi A, Canonica GW, Fonseca JA, Vidal A, Choi HJ, Kim HJ, Le Moing V, Reynes J, Sheikh A, Akdis CA, Zuberbier T; ARIA group (including **Skrindo I**). Nrf2-interacting nutrients and COVID-19: time for research to develop adaptation strategies. *Clin Transl Allergy*. 2020 Dec 3;10(1):58.

Falkenberg-Jensen B, Jablonski GE, **Silvola JT**, Kristiansen JF, Hopp E. CT imaging of the Eustachian tube using focal contrast medium administration: a feasibility study in humans. *Acta Radiol Open*. 2020 Jan 22;9(1):2058460119900435.

Gladiné K, Wales J, **Silvola J**, Muyschondt PGG, Topsakal V, Van De Heyning P, Dirckx JJJ, **von Unge M**. Evaluation of Artificial Fixation of the Incus and Malleus With Minimally Invasive Intraoperative Laser Vibrometry (MIVIB) in a Temporal Bone Model. *Otol Neurotol*. 2020 Jan;41(1):45-51.

Grønseth T, Vestby LK, Nesse LL, **von Unge M**, **Silvola JT**. Bioactive glass S53P4 eradicates *Staphylococcus aureus* in biofilm/planktonic states in vitro. *Ups J Med Sci*. 2020 Aug;125(3):217-225

Nordhagen LS, Kreyberg I, Bains KES, Carlsen KH, Glavin K, Skjerven HO, Småstuen MC, Hilde K, Nordlund B, Vettukattil R, Hedlin G, Granum B, Jonassen CM, Gudmundsdóttir HK, Haugen G, Rehbinders EM, Söderhäll C, Staff AC, Lødrup Carlsen KC; PreventADALL study group (including **Skrindo I**). Maternal use of nicotine products and breastfeeding 3 months postpartum. *Acta Paediatr*. 2020 Dec;109(12):2594-2603.

Rönblom A, Gladiné K, Niklasson A, **von Unge M**, Dirckx J, Tano K. A New, Promising Experimental Ossicular Prosthesis: A Human Temporal Bone Study With Laser Doppler Vibrometry. *Otol Neurotol*. 2020 Apr;41(4):537-544.

Silvola JT. Endoscopic findings and long-term hearing results for pediatric unilateral conductive hearing loss. *Int J Pediatr Otorhinolaryngol*. 2020 Jun;133:109983. doi: 10.1016/j.ijporl.2020.109983.

Skjerven HO, Rehbinders EM, Vettukattil R, LeBlanc M, Granum B, Haugen G, Hedlin G, Landrø L, Marsland BJ, Rudi K, Sjøborg KD, Söderhäll C, Staff AC, Carlsen KH, Asarnej A, Bains KES, Carlsen OCL, Endre KMA, Granlund PA, Hermansen JU, Gudmundsdóttir HK, Hilde K, Håland G, Kreyberg I, Olsen IC, Mägi CO, Nordhagen LS, Saunders CM, **Skrindo I**, Tedner SG, Værnesbranden MR, Wiik J, Jonassen CM, Nordlund B, Carlsen KCL. Skin emollient and early complementary feeding to prevent infant atopic dermatitis (PreventADALL): a factorial, multicentre, cluster-randomised trial. *Lancet*. 2020 Mar 21;395(10228):951-961.

ABSTRACTS AND POSTERS

Hrubos-Strøm H. Biofeedback and shared decisions in co-morbid insomnia and obstructive sleep apnea (COMISA). Oslo Communication in Healthcare Education and Research (OCHER) 2020.

Øverby TC, Sutharshan P, Gulbrandsen P, Dammen T, **Hrubos-Strøm H.** Shared decision making and treatment adherence in patients diagnosed with obstructive sleep apnoea. Oslo Communication in Healthcare Education and Research (OCHER) 2020.

Thorshov T, **Hrubos-Strøm H.** Reasons for low compliance using positive airway pressure devices: Exploratory study of patients with COMISA and poor CPAP adherence. Oslo Communication in Healthcare Education and Research (OCHER) 2020.

Hrubos-Strøm H. Orofacial Myofunctional Therapy with Autofeedback in the Horizon 2020 Sleep Revolution Application. Academy of Applied Myofunctional Sciences (AAMS) 5th congress 2020.

Øverby TC, Sutharshan P, Gulbrandsen P, Dammen T, **Hrubos-Strøm H.** Shared decision making in obstructive sleep apnea, does it happen? 25th Congress of the European Sleep Research Society (ESRS), September 2020.

ACADEMIC ASSIGNMENTS

Opponent/member of adjudication committee

Opponent on the thesis: Quality of life in persons with hearing loss: The importance of psychological variables and hearing loss severity. Øivind Nordvik, Medical faculty, University of Bergen, February 14, 2020. **Silvola J.**

Opponent on the thesis: Middle ear cholesteatoma: Surgical outcome and aspects of the innate immunity. Johanna Westerberg, Medical faculty, University of Linköping, November 13, 2020. **Silvola J.**

Member of the Examination Board for licentiate dissertation: Hearing in children with cleft palate. Birgitta Tengrot, Karolinska Institutet, March 18, 2020. **von Unge M.**

Arranged meetings

Meeting for the general population regarding orofacial myofunctional therapy. January 2020, **Hrubos-Strøm H.**

Other academic activities

Otology

Main supervisor for Andreas Forsmark, University of Oslo. **Silvola J.**

Main supervisor for Torstein Grønseth, University of Oslo. **Silvola J.**

Main supervisor for Arne Rødsvik in his thesis "Speech sound confusions in well-performing adults and children with cochlear implants, measured by repetition of mono- and bisyllabic nonsense words», University of Oslo. Digital disputation 08.05.2020. **Silvola J.**

Main supervisor for Atte Sjöholm, University of Tampere, Finland. **Silvola J.**

Supervisor for Lena Pöyhönen, University of Tampere. **Silvola J.**

Supervisor for Andreas Forsmark, University of Oslo. **von Unge M.**

Supervisor for Torstein Grønseth, University of Oslo. **von Unge M.**

Supervisor for Elnaz Sepehri, Karolinska Institute, Sweden. **von Unge M.**

Supervisor for Anton Rönblom, Umeå University, Sweden. **von Unge M.**

Reviewer for Journal of Otology. **von Unge M.**

Sleep Disordered Breathing

Main supervisor for Thorarinn Olafsson, University of Oslo. **Hrubos-Strøm H.**

Supervisor for Tonje Caroline Øverby, University of Oslo. **Hrubos-Strøm H.**

Supervisor for medical student master project, Kaisa Filtvedt, University of Oslo. **Hrubos-Strøm H.**

Supervisor for medical student master project, Benedikte Berge, University of Oslo. **Hrubos-Strøm H.**

Rhinology

Main supervisor for Ivar Vølstad, University of Oslo. **Bachmann-Harildstad G.**

Supervisor for Kjell Arild Danielsen, University of Oslo. **Bachmann-Harildstad G.**

Supervisor for Øystein Eskeland, University of Oslo. **Bachmann-Harildstad G.**

Supervisors for Thorarinn Olafsson, University of Oslo. **Bachmann-Harildstad G, Steinsvik A.**

Memberships

Member of Editorial Board for Rhinology. **Bachmann-Harildstad G.**

Leader of International Rhinologic Society Standardization Committee on Objective Assessment of the Nasal Airway – ISCOANA. European Rhinologic Society **Bachmann-Harildstad G.**

Member of Deutsche Ärztgesellschaft für Akupunktur. **Bachmann-Harildstad G.**

Elected leader of the sleep advisory board for the Otorhinolaryngology Association of the Norwegian Medical Association. **Hrubos-Strøm H.**

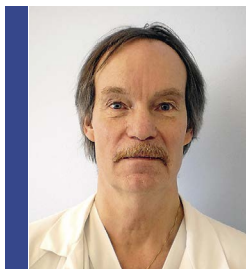
Elected member of the board and treasurer of the Norwegian Society for Sleep Research and Sleep Medicine. **Hrubos-Strøm H.**

Member of European Sleep Research Association. **Hrubos-Strøm H.**

Ongoing research projects	Project leader/ PhD student
The cultivation on of epidermal keratinocytes for improved treatment of tympanic membrane perforations	Juha Silvola PhD student: Andreas Hassel Forsmark
The Constitutive Migration of the Tympanic Keratinocytes	Juha Silvola PhD student: Andreas Hassel Forsmark
Assessment of the epithelial regeneration centers in the human tympanic membrane in normal and activated conditions	Magnus von Unge PhD student: Elnaz Seperhi
Laser-Doppler vibrometry: Intra-operative measurement of hearing bone mobility, development of a minimally invasive intraoperative vibrometry method (MIVIB)	Juha Silvola PhD student: Jeremy Wales (Karolinska)
Staphylococcus biofilm in otitis media chronica	Juha Silvola PhD student: Torstein Grønseth (OUS)
Nonsense words as a hearing test for cochlear implanted adults and children Dissertation: May 8, 2020	Juha Silvola PhD student: Arne Rødsvik (UiO)
Akershus Sleep Apnea Diagnostic and Treatment Evaluation (ASADaTE), diagnostic part	Harald Hrubos-Strøm PhD student: Thorarinn Olafsson
Nord Sleep Akershus Sleep Apnea Personalized medicine (ASAP) clinical cohorts	Harald Hrubos-Strøm PhD student: Tonje Caroline Øverby
Akershus Søvnappé prosjekt II	Harald Hrubos-Strøm PhD student: Tonje Caroline Øverby
The distribution and prevalence of biofilm in chronic rhinosinusitis with or without polyposis nasi Dissertation: June 11, 2020	Espen Burum-Auensen PhD student: Kjell-Arild Danielsen
The assessment of the nasal airway by PNIF and quality of life in patients with nasal obstruction	Gregor Bachmann-Harildstad PhD student: Ivar Vølstad
PreventADALL: Is asthma or rhinitis in young children reduced in children subjected to primary prevention of atopic dermatitis and/or food allergy?	Ingebjørg Skrindo Main investigator: Karin Lødrup Carlsen (OUS)
Depth and breadth in the vocabulary of school-aged children with hearing impairment	Håvard Ottemo Paulsen Main investigator: Ulrika Löfkvist (UiO)

GRANTED FUNDING

Project	Source	Amount
Nord Sleep ASAP Hrubos-Strøm H.	Forskningsrådet/ NordForsk (2019-2024)	7,300,000
ProRHINO Hrubos-Strøm H.	Nasjonal kompetanse- tjeneste for søvn- sykdommer, Sovno.no.	100,000
Equipment for 3D lab and other projects ENT department/Silvola J.	Akershus University Hospital Publication money	153,000



Gastrointestinal Surgery Research Group

Head: Professor Ola Røkke

Department of GI surgery

University employees	Research fellows
Professor II Ola Røkke	Yngve Thorsen
Professor II Dejan Ignjatovic	Robin Gaupset
Professor emeritus Arne Olav Bakka	Gurpreet Singh Banipal
Professor emeritus Tom Øresland	Kourosh Piroozmand
Lecturer Javier Luzon	Yasir Malik
	Anne Helene Ask Lilleaas

At the department of digestive surgery there are 41 doctors, nine of whom had a doctoral degree at the end of 2020: Ola Røkke, Dejan Ignjatovic, Rolf Aamodt, Arne Engebretth Færden, Geir Arne Larsen, Marianne Merok, Lars Eftang, Odd Langbach, and Johannes Kurt Schultz.

We consider research as an important part of our clinical practice. Science should be a conscious part of the clinical work for all employees at our department. Doctors not directly involved in research programs should be aware of the importance of ongoing projects and contribute when possible. The plan for 2021 is to continue to promote scientific work through regular

discussions in clinical practice, regular meetings, attendance on scientific meetings and seminars, increase the efforts to obtain external financial resources, and initiation of PhD-projects, with a special focus on four subjects:

- 1) Cancer: colorectal, gastric, small bowel
- 2) Development of surgical techniques and virtual anatomic equipment
- 3) Pancreatic diseases, especially acute pancreatitis
- 4) Inflammatory bowel disease

DISSERTATION



Jens Marius Næsgaard

The introduction and implementation of right colectomy with extended D3 mesenterectomy anterior and posterior to the mesenteric vessels

Supervisor: Dejan Ignjatovic

Graduation: June 8, 2020

Lymphatic spread is one of the routes colon cancer disseminates. The main aim of this dissertation was to report on right colectomy with extended D3 mesenterectomy anterior and posterior to the mesenteric vessels (RD3APM), a new surgical procedure for right sided colon cancer comprising extended central lymphatic tissue resection of the D3 volume. The borders of D3 volume of lymphatic tissue draining the cancer were defined using anatomical studies of the lymph vessel trajectories central in the mesentery. Three-dimensional reconstructed (3DR) abdominal CT scans were used to investigate and classify normal variations of crossing patterns between superior mesenteric artery and vein, and their main branches. 3DR was also used to find arterial and venous abnormalities central in the mesentery,

which were classified and compared to other studies. We found that 3DR provided reliable information when vascular anatomy found with 3DR were compared to that found at surgery. 3DR can therefore be used as a roadmap for surgery making challenging operations central in the mesentery easier and safer. Open and laparoscopic RD3APM were found to be feasible and the lymph node yield was larger compared to standard procedures. The complications and adverse effects of RD3APM seem to be comparable to those of standard procedures. The impact of the open RD3APM on vessel stump lengths and the completeness of the lymphadenectomy were assessed and deemed acceptable in all investigated patients.

PUBLICATIONS (PEER REVIEWED)

Agustsdottir EES, Stimec BV, Stroemmen TT, **Sheikh AE**, Elaiyarajah I, Lindstroem JC, **Ignjatovic D**.

Preventing chylous ascites after right hemicolectomy with D3 extended mesenterectomy.

Langenbecks Arch Surg. 2020 Nov;405(7):1017-1024.

Arezzo A, Francis N, Mintz Y, Adamina M, Antoniou SA, Bouvy N, Copaescu C, de Manzini N, Di Lorenzo N, Morales-Conde S, Müller-Stich BP, Nickel F, Popa D, Tait D, Thomas C, Nimmo S, Paraskevis D, Pietrabissa A; EAES Group of Experts for Recovery Amid COVID-19 Pandemic (including **Ignjatovic D**).

EAES Recommendations for Recovery Plan in Minimally Invasive Surgery Amid COVID-19 Pandemic.

Surg Endosc. 2021 Jan;35(1):1-17. doi: 10.1007/s00464-020-08131-0. Epub 2020 Nov 10.

Azhar N, Buchwald P, Ansari HZ, Schyman T, Yaqub S, **Øresland T**, **Schultz JK**.

Risk of colorectal cancer following CT-verified acute diverticulitis -a nationwide population-based cohort study. Colorectal Dis. 2020 Oct;22(10):1406-1414.

Azhar N, **Johanssen A**, Sundström T, Folkesson J, Wallon C, Kørner H, Bleic L, Forsmo HM, **Øresland T**, **Yaqub S**, Buchwald P, **Schultz JK**; SCANDIV Study Group.

Laparoscopic Lavage vs Primary Resection for Acute Perforated Diverticulitis: Long-term Outcomes From the Scandinavian Diverticulitis (SCANDIV) Randomized Clinical Trial.

JAMA Surg. 2021 Feb 1;156(2):121-127. Epub JAMA Surg. 2020 Dec 23.

Brun H, Pelanis E, Wiig O, **Luzon JA**, Birkeland S, Kumar RP, Fretland ÅA, Suther KR, Edwin B, Elle OJ.

Mixed reality - new image technology in experimental use. Tidsskr Nor Laegeforen. 2020 Nov 23;140(17).

Faerden AE, Wasmuth HH. Guidance for transanal total mesorectal excision had to be a general halt of the procedure. Colorectal Dis. 2021 Feb;23(2):549-550. doi: 10.1111/codi.15421. Epub 2020 Dec 4.

Hoel AT, Tofft L, Bjørnland K, Gjone H, Teig CJ, **Øresland T**, Stenström P, Andersen MH. Reaching adulthood with Hirschsprung's disease: Patient experiences and recommendations for transitional care. J Pediatr Surg. 2021 Feb;56(2):257-262. doi: 10.1016/j.jpedsurg.2020.05.015. Epub 2020 May 16.

Lanzillotta M, **Vinge-Holmquist O**, Overbeek KA, Poulsen JL, Demirci AF, Macinga P, Löhr M, Rosendahl J.

PrescrAIP: A Pan-European Study on Current Treatment Regimens of Auto-Immune Pancreatitis.

Front Med (Lausanne). 2020 Aug 5;7:408. doi: 10.3389/fmed.2020.00408. eCollection 2020.

Luzon JA, Stimec BV, **Bakka AO**, Edwin B, **Ignjatovic D**. Value of the surgeon's sightline on hologram registration and targeting in mixed reality. Int J Comput Assist Radiol Surg. 2020 Dec;15(12):2027-2039.

Malik YG, Lyckander LG, Lindstrøm JC, **Vinge-Holmquist O**, **Sheikh AE**, **Schultz JK**, **Ignjatovic D**.

Stratification of Stage III colon cancer may identify a patient group not requiring adjuvant chemotherapy.

J Cancer Res Clin Oncol. 2021 Jan;147(1):61-71. doi: 10.1007/s00432-020-03381-w. Epub 2020 Sep 13.

Milone M, Carrano FM, Letić E, Shamiyeh A, Forgiione A, Eom BW, Müller-Stich BP, Ponz CB, Kontovounisios C, Preda D, **Ignjatovic D**, Cassinotti E, Yiannakopoulou E, Theodoropoulos G, Faria G, Morelli L, Gorter-Stam M, Markar S, Arulampalam T, Velthoven T, Antoniou SA, Francis NK. Surgical challenges and research priorities in the era of the COVID-19 pandemic: EAES membership survey. Surg Endosc. 2020 Oct;34(10):4225-4232.

Remzi FH, Panis Y, Spinelli A, Kotze PG, Mantzaris G, Söderholm JD, d'Hoore A, Bemelman WA, Yamamoto T, Pemberton JH, Tiret E, **Øresland T**, Fleshner P. International Organization for the Study of IBD

Recommendations for Surgery in Patients With IBD During the Coronavirus Disease 2019 Pandemic.

Dis Colon Rectum. 2020 Jul;63(7):870-873.

Schultz JK, Azhar N, Binda GA, Barbara G, Biondo S, Boermester MA, Chabok A, Consten ECJ, van Dijk ST, **Johanssen A**, Kruis W, Lambrichts D, Post S, Ris F, Rockall TA, Samuelsson A, Di Saverio S, Tartaglia D, Thorisson A, Winter DC, Bemelman W, Angenete E. European Society of Coloproctology: guidelines for the management of diverticular disease of the colon. *Colorectal Dis.* 2020 Sep;22 Suppl 2:5-28. doi: 10.1111/codi.15140. Epub 2020 Jul 7.

Stimec BV, **Ignjatovic D**. Navigating the mesentery: part III. Unusual anatomy of ileocolic vessels. *Colorectal Dis.* 2020 Dec;22(12):1949-1957.

Tofft L, Hoel AT, Håkansson C, Zawadzki A, Gjone H, **Øresland T**, Bjørnland K, Stenström P. Key components of successful transition for adolescents born with anorectal malformations-a Nordic focus group study. *Int J Adolesc Med Health.* 2020 Sep 4:/j/ijamh.ahead-of-print/ijamh-2020-0052/ijamh-2020-0052.xml. doi: 10.1515/ijamh-2020-0052. Online ahead of print.

Wasmuth HH, Larsen SG, **Faerden AE**. TaTME and the worse oncological outcome - new data demonstrates a difficult method. *Br J Surg.* 2020 Nov;107(12):e611. doi: 10.1002/bjs.11850. Epub 2020 Sep 16.

ACADEMIC ASSIGNMENTS

Opponent/member of adjudication committee

Opponent on the thesis: Surgery for rectal cancer: the impact of perioperative factors. Daniel Kverneng Hultberg. Umeå University, February 7. **Øresland T**.

Invited lecturer

Webinar on Perforated diverticulitis at the University of Pisa, **Schultz JK**.

Bekkenreservoarkirurgi. Svenska kolorektaldagarna, March 26. **Øresland T**.

Arranged meetings

The 10th Ahus Colorectal Symposium: «Excellence in Surgery, Is it all About the Access?» Akershus University Hospital, January 30-31. **Schultz JK**.

Honorary session for Professor Tom Øresland. January 31. **Schultz JK**.

Norwegian Annual Meeting 2021, Organizer and Chair Symposium on Low Rectal Anastomosis. **Schultz JK**.

Other academic activities

Main supervisor for Jens Marius Næsgaard, Vestfold Hospital Trust. **Ignjatovic D**.

Main supervisor for Yngve Thorsen, Akershus University Hospital. **Ignjatovic D**.

Main supervisor for Javier A. Luzon, University of Oslo. **Ignjatovic D**.

Main supervisor for Gurpreet Singh Banipal, Akershus University Hospital. **Ignjatovic D**.

Main supervisor for Anne Helene Lilleaas, Akershus University Hospital. **Ignjatovic D**.

Main supervisor for Robin Gaupset, Akershus University Hospital. **Røkke O**.

Main supervisor for Kourosh Piroozmand, Akershus University Hospital. **Røkke O**.

Main supervisor for Olof Vinge-Holmquist, Akershus University Hospital. **Røkke O**.

Main supervisor for Yasir Malik, Akershus University Hospital. **Schultz JK**.

Co-supervisor for Javier A. Luzon, University of Oslo. **Bakka AO**.

Co-supervisor for Gurpreet Singh Banipal, Akershus University Hospital. **Bakka AO.**

Co-supervisor for Jens Marius Næsgaard, Vestfold Hospital Trust. **Bakka AO.**

Co-supervisor for Robin Gaupset, Akershus University Hospital. **Eftang L.**

Co-supervisor for Yasir Malik, Akershus University Hospital. **Færden AE.**

Co-supervisor for Robin Gaupset, Akershus University Hospital. **Ignjatovic D.**

Co-supervisor for Yasir Malik, Akershus University Hospital. **Ignjatovic D.**

Co-supervisor for Najia Azhar, Lund University. **Schultz JK.**

Co-supervisor for Yngve Thorsen, Akershus University Hospital. **Øresland T.**

Co-supervisor for Mathilde Risopatron, University of Oslo. **Øresland T.**

Co-supervisor for Anders Telle Hoel, University of Oslo. **Øresland T.**

Editor of IBD Congress News. **Øresland T.**

Reviewer for Diseases of the Colon & Rectum and Colorectal diseases. **Ignjatovic D.**

Reviewer for Br J Surgery, Scand J Gastroent, Colorectal Disease. **Schultz J.**

Reviewer for Br J Surgery, Scand J Gastroent, JCC, Colorectal Disease, Alimentary Pharmacology and Therapeutics. **Øresland T.**

Memberships

Elected member of the International Surgical Group (ISG). **Bakka AO.**

S-ECCO consensus participant. **Færden AE.**

Member of the Norwegian Gastrointestinal Cancer Group – Colorectal. **Færden AE.**

Member of the group responsible for the revised national colorectal strategy plan. **Færden AE.**

Member of the Research Committee European Association of Endoscopic Surgery EAES. **Ignjatovic D.**

Members of the Norwegian National Registry for Anal Incontinence (NRA). **Lindam A, Naimy N, Øresland T.**

European Society of Coloproctology National representative. **Schultz JK.**

Editorial Advisory board member Colorectal Disease. **Schultz JK.**

Member of Steering Committee, ALASCCA. **Øresland T.**

Elected member of The International Society for the study of IBD (IOIBD) and the Swedish SOIBD. **Øresland T.**

Editorial Advisory board member Colorectal Disease. **Øresland T.**

Editorial board member Scandinavian Journal of gastroenterology. **Øresland T.**

Ongoing research projects	Project leader/ PhD student
Scandinavian Diverticulitis Trial (SCANDIV- Randomized clinical trial)	Johannes Kurt Schultz
Scandinavian Diverticulitis Trial II (SCANDIV II- observational study)	Johannes Kurt Schultz
Tailoring chemotherapy and surgical treatment for colon cancer to the patient and not vice versa	Johannes Kurt Schultz PhD student: Yasir Malik
What is the risk of intestinal dysfunction after small bowel denervation during modern surgery for right-sided colon cancer? The study concerns: alterations in bowel function; compensatory mechanisms; development of a bowel function prediction model; anatomical evidence	Dejan Ignjatovic PhD student: Yngve Thorsen
Applying emerging three-dimensional (3D) visualization technologies to macro and micro anatomical datasets, for the improvement of operative planning, performance and outcomes in colon cancer surgery	Dejan Ignjatovic PhD student: Javier Luzon
Assessing right colon cancer patients with metastatic central (D3) lymph nodes. Identifying the group benefiting from extended mesenterectomy and evaluation of radiological and pathological diagnostic procedures	Dejan Ignjatovic PhD student: Gurpreet Singh Banipal
Surgery with extended (D3) mesenterectomy for small bowel tumors	Dejan Ignjatovic PhD student: Anne Helene Ask Lilleaas
The introduction of advanced treatment principles for gastric cancer focused on the significance of chemotherapy and laparoscopic approach	Ola Røkke PhD student: Robin Gaupset
Defining new explanations for bad outcome after necrotizing pancreatitis using CT-scans	Ola Røkke PhD student: Kourosh Piroozmand
Identification of microbial agents as a novel cause of acute pancreatitis using next-generation sequencing	Ola Røkke PhD student: Olof Vinge-Holmquist
“Watch and Wait” in patients with complete clinical response (cCR) after neo-adjuvant chemoradiotherapy for primary locally advanced rectal cancer	Arne E Færden Main investigator: Hartwig Körner (SUS)
A randomized double-blind placebo-controlled study with ASA treatment in colorectal cancer patients with mutations in the PI3K signaling pathway (ALASCCA)	Tom Øresland Main investigator: Anna Martling (Karolinska)
Molecular drivers and inhibitors of colorectal cancer in inflammatory bowel diseases	Tom Øresland Main investigator: Stephan Brackmann
Anorectal Malformations and Hirschsprung Disease. What are the problems, needs and expectations in young adults operated for Anorectal Malformations and Hirschsprung Disease in childhood? A Scandinavian multicenter project.	Tom Øresland Main investigator: Kristin Bjørnland (OUS)

GRANTED FUNDING

Project	Source	Amount
Surgery with extended (D3) mesenterectomy for small bowel tumors Ignjatovic D.	Helse Sør-Øst (2019-2024)	3,288,000 NOK
SCANDIV II Schultz JK.	Akershus University Hospital Publication money	25,000
A randomized double-blind placebo-controlled study with 5ASA treatment in colorectal cancer patients with mutations in the PI3K signalling pathway Øresland T.	Akershus University Hospital Publication money	170,000
Tailoring chemotherapy and surgical treatment for colon cancer to the patient and not vice versa Schultz JK.	Akershus University Hospital Publication money	100,000

Department of Anaesthesia and Intensive care

University employees	Ahus Research fellows
Professor Signe Søvik	MD MSc Will Morton
University Lecturer Agata Sandmo	MD PhD Vladimir Brüggeman
Professor emeritus Vegard Dahl	MD PhD Janus A. Hyldebrandt
	MD Maria Kristina Ravn
	MD PhD Maria Skytjoti
	MD Felix Haidl
	MD Jørgen Dahlberg
	RN MSc Astrid Marie Berg
	MD Sjur Tveit
	MD PhD Ane-Victoria Idland

Research activity and research ambitions

Academic positions in the Department of Anaesthesia and Intensive Care are two University of Oslo professors and one university lecturer. Presently, one professorship is vacant while several applicants for the position are being evaluated. One university lecturer, a consultant anaesthesiologist in a 50-50% research-clinical position, and an ICU nurse are pursuing their PhD projects. A number of other research projects, three clinical trials, and several master projects in the department are in process, run by other anaesthesia doctors and nurses. Our department experiences an ongoing and steep increase in research activity, in large part brought about by staff in non-academic positions, both doctors and nurses.

Research projects in our department are Ahus-based as well as co-operations with research groups at the Division of Emergencies and Critical Care at Oslo University Hospital, the Centre for Medical Ethics, University of Oslo, and the Institute

of Basic Medical Sciences, University of Oslo. Master projects for anaesthetic nurses are undertaken in cooperation with OsloMet.

The Covid-19 pandemic severely hampered the research activity in our department in 2020, necessitating the entire staff to concentrate solely on patient work for several months. However, the pandemic also spurred several research projects in intensive care medicine, bringing with them new and promising cooperation with the Departments of Cardiology, Infectious Diseases, and Nephrology, as well as regional and national collaborations. These networks are expected to grow.

A continuing aim in our department is that the majority of research projects undertaken by nurses and medical students should result in published scientific work in referee-based journals. High-quality research in smaller projects is an important tool for increasing the interest for, and ultimately the recruitment to and funding of, larger and more demanding research projects. We aim to partake in relevant clinical trials.

PUBLICATIONS (PEER REVIEWED)

Dahlberg J, Eriksen C, Robertsen A, Beitland S. Barriers and challenges in the process of including critically ill patients in clinical studies. Version 2. *Scand J Trauma Resusc Emerg Med*. 2020 Jun 8;28(1):51 doi: 10.1186/s13049-020-00732-x

Haidl F, Rosseland AL, Rørvik AM, **Dahl V**. Programmed intermittent boluses vs continuous epidural infusion in labor using an adrenaline containing solution: A randomized trial. *Acta Anaesthesiol Scand*. 2020 Nov;64(10):1505-1512. doi: 10.1111/aas.13689

Hui D, **Søvik S**. Postoperative pain course after paediatric tonsillectomy: A prospective observational study comparing one behavioural and one numerical pain assessment tool. *Int J Pediatr Otorhinolaryngol*. 2020 Nov;138:110395. doi: 10.1016/j.ijporl.2020.110395

Josiassen J, Helgestad OKL, Udesen NLJ, Banke A, Frederiksen PH, **Hyldebrandt JA**, Schmidt H, Jensen LO, Hassager C, Ravn HB, Møller JE. Unloading using Impella CP during profound cardiogenic shock caused by left ventricular failure in a large animal model: impact on the right ventricle. *Intensive Care Med Exp*. 2020 Aug 12;8(1):41. doi: 10.1186/s40635-020-00326-y

Myhre PL, Prebensen C, Strand H, Røysland R, Jonassen CM, Rangberg A, **Sørensen V**, **Søvik S**, Røsjø H, Svensson M, Berdal JE, Omland T. Growth Differentiation Factor-15 Provides Prognostic Information Superior to Established Cardiovascular and Inflammatory Biomarkers in Unselected Patients Hospitalized with COVID-19. *Circulation*. 2020 Dec;142(22):2128-2137. doi: 10.1161/CIRCULATIONAHA.120.050360

Omland T, Prebensen C, Røysland R, **Søvik S**, **Sørensen V**, Røsjø H, Svensson M, Berdal JE, Myhre PL. Established Cardiovascular Biomarkers Provide Limited Prognostic Information in Unselected Patients Hospitalized with COVID-19. *Circulation*. 2020 Nov 10;142(19):1878-1880. doi: 10.1161/CIRCULATIONAHA.120.050089

Ottestad W, **Søvik S**. COVID-19 patients with respiratory failure: what can we learn from aviation medicine? *Br J Anaesth*. 2020 Sep;125(3):e280-e281. doi: 10.1016/j.bja.2020.04.012

Søvik S, **Bådstøløkken PM**, **Sørensen V**, Myhre PL, Prebensen C, Omland T, Berdal JE. A single-centre, prospective cohort study of COVID-19 patients admitted to ICU for mechanical ventilatory support. *Acta Anaesthesiol Scand*. 2021 Mar;65(3):351-359. doi: 10.1111/aas.13726. Epub 2020 Oct 15.

ACADEMIC ASSIGNMENTS

Opponent at mid-term evaluation

Cand nurs. Mette Dokken at the Dept. of Anaesthesia, Oslo University Hospital Rikshospitalet, had her PhD midterm evaluation by Professor **Signe Søvik**.



Impact of hypovolemia and hypercapnia on cerebral blood flow in healthy humans is being assessed by PhD candiate Nathalie Holme, associate professor Maja Elstad, and Ahus/UiO university lecturer Agata Sandmo.

Ongoing research projects in 2020	Project leader/ PhD candidate
What is the optimal infusion rate of remifentanyl for children undergoing adeno-tonsillectomy?	Signe Søvik PhD candidate: Will Morton
Evaluation of level and duration of postoperative pain in children undergoing tonsillectomy	Signe Søvik Medical student: David Hui
Prediction and prevention of healthcare-associated infections, using high-dimensional regression methods on big data	Signe Søvik PhD candidate: Zhi Chang
The effect of permissive hypercapnia on cerebral blood flow during central hypovolemia	Signe Søvik PhD candidate: Nathalie Holme, IMB at UiO
Changes in cerebral blood flow during robot assisted laparoscopic prostatectomy in steep Trendelenburg position	Signe Søvik Post docs: Sjur Tveit and Janus Hyldebrandt
CarbetocinHeart2014: The Clinical Carbetocin Myocardium Trial A study of the effects of oxytocin and carbetocin on the heart	Hanne Johnsen & Vegard Dahl Principal investigator: Leiv Arne Rosseland, OUS
Pharmacokinetic interaction effects of combined fentanyl and adrenaline in epidural analgesia during childbirth	Vegard Dahl PhD candidate: Felix Haidl
Information given to women receiving epidural analgesia for labour pain	Vegard Dahl PhD candidate: Felix Haidl
Peroral oxycodone as analgetic regime in the immediate postoperative period after caesarean section	Vegard Dahl
Assessing competence to consent to somatic health care	Vegard Dahl PhD candidate: Jørgen Dahlberg
Intensivmedisinske prioriteringsbeslutninger under Covid-19 pandemien (Study: INTENSIV TRIAGE)	Jørgen Dahlberg
Stress og helseplager hos sykehuspersonell under covid-19 pandemien	Vegard Dahl
Helsepersonells erfaringer med Covid-19 pasienter på intensivavdelinger i Norge	Astrid Marie Nysted Berg
Postoperative Vasopressor Usage: a Prospective International Observational Study (SQUEEZE)	Maria Kristina Ravn For the European Society for Anaesthesiology
ProAct, NEWS and MIG - implications for patient safety in a Norwegian hospital	PhD candidate: Astrid Marie Nysted Berg
Morphine or Ketamine for treatment of in-hospital cardiac arrest A randomized, double blinded clinical trial	Vladimir Bruggemann
Master thesis: Shave the date, it's time for surgery. Anesthesia nurse's experience with mask ventilation of men with beard	Reidun Mork

The Operating Department

PUBLICATION (PEER REVIEWED)

Hanssen I, **Smith Jacobsen IL, Skråmm SH**. Non-technical skills in operating room nursing: Ethical aspects. Nurs Ethics. 2020 Aug;27(5):1364-1372. doi: 10.1177/0969733020914376.

ABSTRACTS AND POSTERS

Skråmm SH, Lervik N, Holseth KØ. Operating room nursing and robotic surgery. Training of OR nurses – how can Akershus university hospital contribute?
Abstract submitted and accepted, but not presented due to Covid, at the 6th NORNA congress (Nordic Congress for Operating Room Nurses).

Ongoing research project	Project leader
Non-technical skills in operating room nursing. A collaborative project between Clinical Nursing practice at the Operating Department and Lovisenberg Diaconal University College	Lise Smith Jacobsen Main investigator: Ingrid Hanssen

Department of Breast and Endocrine Surgery

University employees	Research fellows
	Berit Gravdehaug
	Joel Touma
	Nazli Bahrami

PUBLICATIONS (PEER REVIEWED)

Bahrami N, Chang G, Kanaya N, Sauer T, Park D, Loeng M, **Gravdehaug B**, Chen S, Geisler J. Changes in serum estrogenic activity during neoadjuvant therapy with letrozole and exemestane. *J Steroid Biochem Mol Biol.* 2020 Jun;200:105641.

Grindedal EM, Jørgensen K, Olsson P, **Gravdehaug B**, Lurås H, Schlichting E, Vamre T, Wangensteen T, Heramb C, Mæhle L. Mainstreamed genetic testing of breast cancer patients in two hospitals in South Eastern Norway. *Fam Cancer.* 2020 Apr;19(2):133-142.

Reis J, Lindstrøm JC, Boavida J, Gjesdal KI, Park D, **Bahrami N**, Seyedzadeh M, Melles WA, Sauer T, Geisler J, Geitung JT. Accuracy of breast MRI in patients receiving neoadjuvant endocrine therapy: comprehensive imaging analysis and correlation with clinical and pathological assessments. *Breast Cancer Res Treat.* 2020 Nov;184(2):407-420.

Ongoing research projects	Project leader/ PhD student
Human Cytomegalovirus infection in Breast Cancer	Jürgen Geisler PhD student: Joel Touma
An interdisciplinary translational approach for patients with locally advanced breast cancer	Jürgen Geisler PhD student: Nazli Bahrami
Optimal Personalised Treatment of early breast cancer using Multi-parameter Analysis (OPTIMA/EMIT-2)	Berit Gravdehaug Main investigator: Bjørn Naume

GRANTED FUNDING

Project	Source	Amount
An interdisciplinary translational approach for patients with locally advanced breast cancer. Jürgen Geisler (Medical division)	Helse Sør-Øst 2018-2021	3,000,000



Vascular and Thoracic Surgery Research Group

Head: Jarlis Wesche

University employees	Research fellows
Associate Professor Jarlis Wesche	Mads Tønnes Helgeland
	Ai Van Thuy Ho
	Other research staff
	Inger Helene Nådland (Research coordinator)
	Anne Rigmor Holten (Research nurse)

At the Department of Vascular and Thoracic Surgery there are eleven consultants, two senior residents in vascular surgery, and two residents in general surgery. One surgeon has a doctoral thesis (Jarlis Wesche). One MSc. has a PhD (Inger Helene Nådland). One nurse in the outpatient clinic has a 10% position as research nurse (Anne Rigmor Holten).

During 2020, we have continued the ongoing projects on endovascular and open treatment for abdominal aneurysms and on hyperhidrosis and thoracoscopic sympathectomy treatment, The Quality of Life assessment study (the VascuQoL-6 study) in patients with peripheral atherosclerotic occlusive disease in collaboration with Østfold Hospital, Kalnes, was finalized and the last paper published in 2020. We continued our collaboration with researchers at Oslo University Hospital in the project on “the vulnerable carotid plaque”. We finished inclusion of patients in the national study on Abdominal aortic aneurysms and diabetes (Abandia study), which was initiated by the

Research Board of the Norwegian Society for Vascular Surgery and is coordinated from Haukeland University Hospital. Jarlis Wesche has been acting PI from August 2019. The short-term data are completed and currently analyzed and a paper is being written and planned to be submitted in 2021. Jarlis Wesche will be co-supervisor to PhD candidate Espen Gubberud (on this project) at Haukeland University Hospital.

Mads T. Helgeland (MD) continues his PhD project on aspects of endovascular treatment (EVAR) of abdominal aortic aneurysms, and was appointed board certified vascular surgeon in 2020.

PhD candidate Ai Van Thuy Ho (MD) has continued her project on “Sweat activity and cardiovascular responses at rest and during physiological strain in healthy subjects and in hyperhidrosis patients”. She has published two papers and revised papers and is writing on a third paper. She plans to finish her thesis in a year.

PUBLICATIONS

Ho AVT, Toska K, **Wesche J**. Rapid, Large, and Synchronous Sweat and Cardiovascular Responses Upon Minor Stimuli in Healthy Subjects. Dynamics and Reproducibility. *Front Neurol*. 2020 Feb 4;11:51.

Larsen ASF, Reiersen AT, **Nådland IH**, **Wesche J**. Self-reported health status and disease-specific quality of life one year after treatment for peripheral arterial disease in clinical practice. *Health Qual Life Outcomes*. 2020 Jul 17;18(1):235.

Aamodt H, **Reier-Nilsen F**, **Olsbø F**, **Eggum R**. Robot assistert thoraxkirurgi på Akershus Universitetssykehus -Våre erfaringer etter 1 års drift. *Kirurgien 2-2020*.

ACADEMIC ASSIGNMENTS

Opponent/member of adjudication committee

Opponent on the thesis: Risk of Abdominal Aortic Aneurysm - With emphasis on women. Linn Åldstedt Nyrønning, NTNU, April 30, 2020. **Wesche J**.

Arranged meetings

Course in infrainguinal vascular surgery for residents in vascular surgery. Ahus/Regut-HSØ November 2020. **Schjerven E**, **Nådland IH**, **Helgeland MT**, **Haukvik JT**, **Wesche J**, **Olsbø F**, **Reier-Nilsen F**, **Eggum R**, **Seljeskog S**, **Bysting S**, **Østrem F**.

Other academic activities

Main supervisor for Mads Tønnes Helgeland, University of Oslo. **Wesche J**.

Main supervisor for Ai Van Thuy Ho, Campus Ahus, University of Oslo. **Wesche J**.

Co-supervisor for Espen Gubberud, University of Bergen. **Wesche J**.

Acting PI of the National Study on The prevalence of diabetes and the morbidity and mortality among patients operated for abdominal aortic aneurysms in Norway (the Abandia study). **Wesche J**.

Local investigator of the Abandia Study. **Helgeland MT**.

Invited lecturer

Basic Surgical Skills Course, January, June, November 2020. **Aamodt H**.

Memberships

Member of the Quality group of the Norwegian Association for Cardiothoracic Surgery. **Eggum R**.

Councilor, UEMS Division and Board of Vascular Surgery. **Wesche J**.

Member of the Research Board of The Norwegian Society for Vascular Surgery. **Wesche J**.

Member the Research Committee, Surgical Division, Akershus University Hospital. **Wesche J**.

Member of the Examination committee (M8), The Medical Faculty, University of Oslo. **Wesche J**.

Member of the National Examination Committee for Common final Digital Exam (M8) for all Medical Faculties in Norway. **Wesche J**.

Ongoing research projects	Project leader/ PhD student
National Study on the prevalence, morbidity and mortality of diabetes in patients operated for AAA (the Abandia study)	Jarlis Wesche (National) Mads T. Helgeland (Ahus)
Sweat activity and cardiovascular function at rest and during physiological strain in healthy subjects	Jarlis Wesche PhD student: Ai Van Thuy Ho
Improved diagnosis and treatment of hyperhidrosis	Jarlis Wesche PhD student: Ai Van Thuy Ho
Endovascular treatment of abdominal aortic aneurysms (EVAR) in Norway, 2000–2013	Jarlis Wesche PhD student: Mads Tønnes Helgeland
Have results after open and EVAR treatment for AAA in Norway changed? Results and trends of AAA treatment in Norway 20 years after the introduction of EVAR (2013-2019)	Jarlis Wesche PhD student: Mads Tønnes Helgeland
Does Endovascular treatment and follow-up after treatment of abdominal aortic aneurysms (EVAR) increase the risk of developing cancer?	Jarlis Wesche PhD student: Mads Tønnes Helgeland
The gut and oral bacteria, atherosclerosis and ischemic stroke study	Jarlis Wesche Mona Skjælland (OUS)
The vulnerable plaque	Jarlis Wesche Mona Skjælland (OUS)



Urology Research Group

Head: *Stig Müller*

University employee	Research group members
Associate Professor Stig Müller	Karol Axcrona
	Anja Løvvik
	Rune Ougland
	Christian Arstad
	Manuela Estop-Garanto
	Frode Nilsen

PUBLICATIONS (PEER REVIEWED)

Dahl AA, Brennhovd B, Fosså SD, **Axcrona K**. A cross-sectional study of current work ability after radical prostatectomy. *BMC Urol.* 2020 Jan 31;20(1):9.

Hektoen HH, Robsahm TE, Andreassen BK, Stenehjem JS, **Axcrona K**, Mondul A, Gislefoss RE. Lifestyle associated factors and risk of urinary bladder cancer: A prospective cohort study from Norway. *Cancer Med.* 2020 Jun;9(12):4420-4432.

Ongoing research projects	Project leader
Reproducibility of multiparametric MRI in men with elevated PSA	Stig Müller
Erectile Dysfunction and Urgency incontinence in the Normal Population (The Tromsø 7-study)	Stig Müller
Molecular profiling of human renal cell cancer	Stig Müller Main investigator: Jan Oldenburg
Epitranscriptomic regulation in bladder cancer – EPIC	Rune Ougland

National urine-based surveillance study of bladder cancer patients	Karol Axcrona Main investigator: Guro Lind (OUS)
Genetiske årsaker til blærekreft	Karol Axcrona Main investigator: Eli Marie Grindedal (OUS)
HoxB13 og blærekreft	Karol Axcrona Main investigator: Eli Marie Grindedal (OUS)
Autofagi i behandling av arvelig nyrekreft	Karol Axcrona Main investigator: Helene Knævelsrud (OUS)



Department of Palliative Medicine

Head: Olav Magnus Fredheim

University employee/group leader	Group members
Olav Magnus Fredheim (NTNU)	Torstein Michelet
	Hans van der Werff
	Siri Steine
	Belal Aljabri
	Ingeborg Skulberg

Two of the nine senior consultants employed through 2019 (Siri Steine and Olav Fredheim) have research experience above PhD-level. Belal Aljabri also holds a PhD.

From January 2014 the department has used 15-20% of a senior consultant position for research. This position has been filled by Olav Fredheim who also holds a position as professor of anaesthesiology and pain medicine at NTNU.

During 2020 four original papers with affiliation to the department were published. Two of these papers were in level-2 publications. One of these papers was based on data collected in Department of Palliative Medicine, with three of four authors being employed at Department of Palliative Medicine. This was the first paper published with clinical data from Department of Palliative Medicine.

PUBLICATIONS (PEER REVIEWED)

Fredheim OM, Skurtveit S, Loge JH, Sjøgren P, Handal M, Hjellvik V. Prescription of analgesics to long-term survivors of cancer in early adulthood, adolescence, and childhood in Norway: a national cohort study. *Pain*. 2020 May;161(5):1083-1091.

Fredheim OM, **Skulberg IM**, Magelssen M, **Steine S**. Clinical and ethical aspects of palliative sedation with propofol-A retrospective quantitative and qualitative study. *Acta Anaesthesiol Scand*. 2020 Oct;64(9):1319-1326.

Gustad KE, Askjer Å, Nortvedt P, **Fredheim OM**, Magelssen M. Refractory suffering at the end of life and the assisted dying debate: An interview study with palliative care nurses and doctors. *Clinical Ethics*, July 2020.

Holmberg ST, Salvesen ØO, Vangen-Lønne V, Hara S, **Fredheim OM**, Solberg TK, Jakola AS, Solheim O, Nygaard ØP, Gulati S. Pain During Sex Before and After Surgery for Lumbar Disc Herniation: A Multicenter Observational Study. *Spine (Phila Pa 1976)*. 2020 Dec 15;45(24):1751-1757.

Ongoing and planned research projects	Project leader
Do not resuscitate orders and end of life decisions	Olav Fredheim
Clinical randomized controlled study comparing intravenous and subcutaneous morphine for patient controlled analgesia in cancer pain (enrolment starting in 2021)	Olav Fredheim
Participation in multicenter trial ParaStop (enrolment starting in 2021)	Olav Fredheim

FUNDING

In 2020 the research group received 34 000 NOK in wage compensation (Publikasjonspenger) from Division of Surgery.

In December 2020 Helse Sør Øst granted Olav Fredheim a career scholarship with total funding of 9 million NOK over an 8-years period starting in 2021. This will be the main source of funding for the research group the next years.



The Pelvic Floor Centre Research Group

*Head: Catherine Joyce Teig, RN, PhD,
Head of the Pelvic Floor Centre*

Overview of the Pelvic Floor Centre Research Group members:

University employees	Group members
Professor Marie Ellstrøm Engh	Anne Grethe Paulsen, MD, Department of Obstetrics and Gynecology
Professor Kari Bø	Johannes Kurt Schultz, MD, PhD, Department of Digestive Surgery
Professor emeritus Tom Øresland	Nazir Naimy, MD, PhD, Department of Digestive Surgery
	Marianne Merok, MD, PhD, Department of Digestive Surgery
	Hilde Gregussen, MD, Department of Digestive Surgery
	Yngve Thorsen, MD, Department of Digestive Surgery
	Anita Lindam, MSc, Department of Digestive Surgery
	Karen Flaten, RN, Department of Digestive Surgery
	Trine Standal, RN, Department of Digestive Surgery
	Anja Løvvik, MD, Department of Urology
	Danuta Polak, MD, Department of Anaesthesia and Intensive care
	Pernille Schjønsby, MD, Department of Obstetrics and Gynecology
	Kjersti Rimstad, MD, Department of Obstetrics and Gynecology
	Memona Majida, MD PhD, Department of Obstetrics and Gynecology
	Anne Negård, MD, PhD, Department of Radiology

	Group members
	Njål Bakka, MD, Department of Radiology
	Kristin Haukeland, MD, Department of Neurology
	Merete Kolberg Tennfjord, PT, PhD, The Pelvic Floor Center
	Ingrid Næss, PT, MSc, The Pelvic Floor Center
	Kjetil Langmark Svaar, MD, Department of Psychiatry
	Ann-Kristin Bæreg, RN, Department of Obstetrics and Gynecology
	Ingeborg Brækken, PT, PhD, The Pelvic Floor Center
	Anne Sofie M. Paus, MD, The Pelvic Floor Center

The Pelvic Floor Centre Research Group, Akershus University Hospital, is a multidisciplinary group established in 2018. The aim of the group is to promote multidisciplinary research and develop innovative methods and cutting-edge strategies within the field of pelvic floor dysfunction.

In addition to our ongoing projects detailed below, The Pelvic Floor Centre Research Group has developed several electronic medical and surgical registries for patients with pelvic floor dysfunctions (i.e. pelvic organ prolapse, anal incontinence, chronic obstipation and defecation problems).

PUBLICATION (PEER REVIEWED)

Hoel AT, Tofft L, Bjørnland K, Gjone H, **Teig CJ**, **Øresland T**, Stenström P, Andersen MH. Reaching adulthood with Hirschsprung's disease: Patient experiences and recommendations for transitional care. J Pediatr Surg. 2021 Feb;56(2):257-262. doi:0.1016/j.jpedsurg.2020.05.015. Epub 2020 May 16.

ACADEMIC ASSIGNMENTS

Memberships

Member of the Norwegian National Registry for Anal Incontinence (NRA). **Teig CJ**, **Øresland T**, **Lindam A**, **Naimy N**.

Member of the Norwegian Research Network Group for Incontinence and Pelvic Floor Dysfunctions. **Teig CJ**, **Engh ME**.

Ongoing research projects	Project leader/PhD student/ Co-workers
Hirschsprungs and Anal Atresi study in collaboration with Rikshospitalet	Tom Øresland/Kristin Bjørnland (OUS) PhD student: Anders Telle Hoel (OUS) Co-workers: Teig CJ, Schultz JK, Merok M, Lindam A, Flaten K.
COVID-19 study - Remote monitoring of patients with anal incontinence under the COVID-19 pandemic	Catherine J Teig Co-workers: Lindam A, Flaten K, Standal T, Schultz JK, Merok M, Øresland T, Ekeland G, Erman N.
Pilot study: A multi group based approach for patients with chronic pelvic pain	Merete K Tennfjord Co-workers: Næss I, Teig CJ, Haukeland K.
Translation and validation of PROM «Sexual dysfunction questionnaire for women perineal tear grade 2” study in collaboration with Karolinska Universitetssjukhuset	Merete K Tennfjord Co-workers: Engh ME, Teig CJ.
A novel method for the translation and cross-cultural adaptation of health-related quality of life patient-reported outcome measurements	Catherine J Teig Co-workers: Engh ME, Grotle M, Saga S, Martini A, Cvancarova MS, Bond M, Kjøllesdal M.
Validation of the Electronic Norwegian PFDI-20 and PFIQ-7 PROMs	Catherine J Teig



Research group for quality and patient safety Division of Surgery

Head: Anne Karin Lindahl

University employees	Research fellows
Professor II Anne Karin Lindahl	Hirut Mergarsa, Ethiopia (University of Oslo)
Professor II Marie Ellstrøm Engh	Mona Haugum (Norwegian Institute for Public Health)
Professor II Asbjørn Årøen	
Associate Professor Juha Silvola	
Associate Professor Knut Magne Augestad	
	Other members at Akershus University Hospital
	Ellen Catharina Deilkås, MD, PhD, Health Services Research Unit
	Astrid Marie Berg, research fellow, Department of Anaesthesia and Intensive care
	Hege Krippendorff, anesthesia nurse, Department of Anaesthesia and Intensive care
	Gørill Birkeli, CCN, MSc, Department of Anaesthesia and Intensive care
	Margrethe Rogne, oncology nurse and master student, Department of Urology
	Pernille Schjønsby, MD, Department of Obstetrics and Gynecology
	Anne Werner, researcher, Health Services Research Unit
	Morten Glasø, MD, PhD, Department of Collaboration and Health Promotion
	Gunnvor Marum, senior advisor, Department of Quality and Patient Safety
	Marie Brudvik, senior advisor, Department of Quality and Patient Safety
	Marit Kise, senior advisor, Medicine and Health Sciences
	Lena Bjerknes Larsen, quality advisor and master student, Surgical Division
	Catherine Joyce Teig, Ostomy and continence nurse, PhD, Head of the Pelvic floor centre
	Toril Bakken, quality advisor, Division of Children and Youth

	Other members outside of Akershus University Hospital
	Anne-Kari Johannessen, researcher, Oslo Metropolitan University
	Lisbeth Thoresen, Associate Professor, Department of Medical Ethics, University of Oslo
	Jon Helgeland, senior researcher, Norwegian Institute for Public Health
	Øyvind Andresen Bjertnæs, senior researcher, Norwegian Institute for Public Health
	Katrine Damgård Skyrud, researcher, Norwegian Institute for Public Health
	Øystein Flesland, senior advisor, Norwegian Directorate of Health
	Hanne Narbuvoold, statistician, Norwegian Directorate for Health

The research group was established late in 2018. There is great interest in research for quality and patient safety across the hospital, and the research group is therefore multidisciplinary. There are several ongoing projects, regarding Surgical global trigger tool, effects of emergency outreach teams, quality indicators for surgery, patient experiences especially with surgical services, and patient safety

in maternity wards in Ethiopia. Cooperation with researchers within Akershus University Hospital, University of Oslo and Oslo Metropolitan University, as well as external partners, will develop further. The research group takes part in a national project in developing Global trigger tool as a national quality indicator.

PUBLICATION (PEER REVIEWED)

Helgeland J, Skyrud K, **Lindahl AK**, Keller D, Augestad KM. Benchmarking of abdominal surgery: a study evaluating the HARM score in a European national cohort. *BJS Open*. 2020 Aug;4(4):637-644.

ABSTRACTS AND POSTERS

Krippendorf H, Larsen LB, Deilkås E, **Lindahl AK**. Studying patient harm by application of Global trigger tool in surgery. Abstract submitted and accepted, but not presented due to Covid, at International Forum on Quality and Patient safety.

ACADEMIC ASSIGNMENTS

Opponent/member of adjudication committee

Opponent on the thesis: Measuring discharge care quality in hospitalised elderly: development and validation of an instrument based on patients' experiences. Ranveig Marie Boge, University of Bergen, March 20, 2020. **Lindahl AK.**

Opponent on the thesis: Adverse events as a measure of patient safety in cancer care. A study of patient safety in cancer patients using the Global Trigger Tool review method to identify adverse events. Ellinor Christin Haukland, University of Tromsø, September 11, 2020. **Lindahl AK.**

Other academic activities

Main supervisor for Hirut Mergarsa, University of Oslo. **Lindahl AK.**

Co-supervisor for Mona Haugum, Norwegian Institute for Public Health. **Lindahl AK.**

Supervisor for several master's thesis students at University of Oslo and University of Bergen. **Lindahl AK.**

Sensor for University of Bergen and for Norwegian University of Life Sciences. **Lindahl AK.**

Peer reviewer of European Journal of Vascular and Endovascular Surgery. **Lindahl AK.**

Membership

Member of the Editorial board of BMC Health services research. **Lindahl AK.**

Ongoing research projects	Project leader
Effects of Medical outreach teams	Astrid Marie Berg
Safety II and the Green cross method	Gørill Birkeli, Anne Karin Lindahl
Global trigger tool, a systematic review	Lena Bjercknes Larsen, Anne Karin Lindahl
Harm measured by the Global trigger tool in surgical wards	Lena Bjercknes Larsen, Anne Karin Lindahl and the GTT group of the Surgical departement



